

**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

Division of Water Resources

William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243

1-888-891-8332 (TDEC)

MAR 16 2017

**Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit**

<b>OFFICIAL STATE USE ONLY</b>	Site #: 113228	Permit #: WR 703.052
--------------------------------	----------------	----------------------

**Section 1. Applicant Information** (individual responsible for site, signs certification below)

Applicant Name: Mr. Eric Moseley

Company: Shady Glen, LLC

Signatory's Title or Position: Owner

Mailing Address: 405 Montbrook Lane

City: Knoxville

State: TN

Zip: 37919

Phone: (865) 539-1112

Fax:

E-mail: ericmoseley@bellsouth.net

**Section 2. Alternate Contact/Consultant Information** (a consultant is not required)

Alternate Contact Name:

Company:

Title or Position:

Mailing Address:

City:

State:

Zip:

Phone:

Fax:

E-mail:

**Section 3. Fee** (check appropriate box and submit requisite fee with application)☒ No Fee Submitted☐ Fee Submitted with Application

Amount Submitted: \$ 0

Current fee schedules for Aquatic Resource Alteration Permit processing may be found at the Division of Water Resources webpage at <http://www.tn.gov/environment/permits/arap.shtml> or by calling (615) 532-0625. Make checks payable to "Treasurer, State of Tennessee".

**Section 4. Project Details** (fill in information and check appropriate boxes)

Site or Project Name: Shady Glen Subdivision

Nearest City, Town or Major Landmark: Knoxville

Street Address or Location: 12616 S. Northshore Drive, Knoxville, TN 37922

County(ies): Knox

MS4 Jurisdiction: Knoxville

Latitude (dd.ddd): 35.8254

Longitude (dd.ddd): -84.1700

Resource Proposed for Alteration: ☒ Stream☐ Wetland☐ Reservoir

Name of Water Resource: Holder Branch

Brief Project Description (a more detailed description is required under Section 8):

Sediment removal for stream remediation

Does the proposed activity require approval from the U.S. Army Corps of Engineers, the Tennessee Valley Authority, or any other federal, state, or local government agency? ☐ Yes ☒ No

If Yes, provide the permit reference numbers:

Is the proposed activity associated with a larger common plan of development? ☐ Yes ☐ No

If Yes, submit site plans and identify the location and overall scope of the common plan of development.

Plans attached? ☐ Yes ☐ No

If applicable, indicate any other federal, state, or local permit authorizations that the overall project site (common plan of development) has obtained in the past (i.e. construction general permit coverage and/or other ARAPs):

TNCGP TNQ050081

**Section 5. Project Schedule** (fill in information and check appropriate boxes)

Start date: June 2015

Estimated end date:

Is any portion of the activity complete now? ☒ Yes ☐ No If yes, describe the extent of the completed portion:

Site grading is ongoing. On a portion of the site the construction of roads, stormwater control facilities and utilities has been completed and house construction has begun. Elsewhere on the site, construction of roads, stormwater control facilities and utilities is ongoing.

# Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit

The required information in Sections 6-11 must be submitted on a separate sheet(s) and submitted in the same numbered format as presented below. If any question is not applicable, state the reason why it is not applicable.

Section 6. Project Description		Attached	
		Yes	No
6.1	A narrative description of the scope of the project	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.2	USGS topographic map indicating the exact location of the project ( <i>can be a photographic copy</i> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.3	Photographs of the resource(s) proposed for alteration with location description ( <i>photo locations should be noted on map</i> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.4	A narrative description of the <b>existing</b> stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.5	A narrative description of the <b>proposed</b> stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.6	In the case of wetlands, include a wetland delineation with delineation forms and site map denoting location of data points	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.7	A copy of all hydrologic or jurisdictional determination documents issued for water resources on the project site	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Section 7. Project Rationale	Attached	
	Yes	No
Describe the need for the proposed activity, including, but not limited to, the purpose, alternatives considered, and what will be done to avoid or minimize impacts to streams or wetlands.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Section 8. Technical Information	Attached		
	Yes	No	
8.1	Detailed plans, specifications, blueprints, or legible sketches of present site conditions and the proposed activity. Plans must be 8.5.x 11 inches. Additional larger plans may also be submitted to aid in application review. The detailed plans should be superimposed on existing and new conditions ( <i>e.g., stream cross sections where road crossings are proposed</i> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.2	For both the proposed activity and compensatory mitigation, provide a discussion regarding the sequencing of events and construction methods	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.3	Depiction and narrative on the location and type of erosion prevention and sediment control (EPSC) measures for the proposed alterations	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Section 9. Water Resources Degradation (degree of proposed impact) <i>Note that in most cases, activities that exceed the scope of the General Permit limitations are considered greater than de minimis degradation to water quality.</i>
My activity, as proposed:
a. <input checked="" type="checkbox"/> Will not cause measurable degradation to water quality b. <input type="checkbox"/> Will only cause de minimis degradation to water quality c. <input type="checkbox"/> Will cause more than de minimis degradation to water quality ( <i>Complete additional sections 9-11</i> ) d. <input type="checkbox"/> Unsure/need more information
<i>For information and guidance on the definition of de minimis and degradation, refer to the Antidegradation Statement in Chapter 0400-40-03-.06 of the Tennessee Water Quality Criteria Rule: <a href="https://www.tn.gov/sos/rules/0400/0400-40/0400-40-03.20131216.pdf">https://www.tn.gov/sos/rules/0400/0400-40/0400-40-03.20131216.pdf</a>. For more information on specifics on what General Permits can cover, refer to the Natural Resources Unit webpage at <a href="http://www.tn.gov/environment/permits/arap.shtml">http://www.tn.gov/environment/permits/arap.shtml</a></i>

If you checked "c." above in Section 9, complete the following 2 sections, 10-11.

Section 10. Detailed Alternative Analysis	Attached		
	Yes	No	
10.1	Analyze all reasonable alternatives and describe the level of degradation caused by each of the feasible alternatives	<input type="checkbox"/>	<input type="checkbox"/>
10.2	Discuss the social and economic consequences of each alternative	<input type="checkbox"/>	<input type="checkbox"/>
10.3	Demonstrate that the degradation associated with the preferred alternative will not violate water quality criteria for uses designated in the receiving waters, and is necessary to accommodate important economic and social development in the area	<input type="checkbox"/>	<input type="checkbox"/>

# Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit

Section 11. Compensatory Mitigation		Attached	
		Yes	No
11.1	A detailed discussion of the proposed compensatory mitigation	<input type="checkbox"/>	<input type="checkbox"/>
11.2	Describe how the compensatory mitigation would result in no net loss of resource value	<input type="checkbox"/>	<input type="checkbox"/>
11.3	Provide a detailed monitoring plan for the compensatory mitigation site	<input type="checkbox"/>	<input type="checkbox"/>
11.4	Describe the long-term protection measures for the compensatory mitigation site (e.g., deed restrictions, conservation easement)	<input type="checkbox"/>	<input type="checkbox"/>

## Certification and Signature

An application submitted by a corporation must be signed by a principal executive officer; from a partnership or proprietorship, by the partner or proprietor respectively; from a municipal, state, federal or other public agency or facility, the application must be signed by either a principal executive officer, ranking elected official, or other duly authorized employee.

*"I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury."*

<u>Eric Mosley</u>	<u>Owner</u>	<u>[Signature]</u>	<u>3/15/17</u>
Printed Name	Official Title	Signature	Date

Submitting the form and obtaining more information Note that this form must be signed by the principal executive officer, partner or proprietor, or a ranking elected official in the case of a municipality; for details see **Certification and Signature** statement above. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed ARAP Application form (keep a copy for your records) to the appropriate EFO for the county(ies) where the ARAP activity is located, addressed to **Attention: ARAP Processing**. You may also electronically submit the complete application and all associated attachments (e.g., maps, wetland delineations and narrative portions) to [water.permits@tn.gov](mailto:water.permits@tn.gov).

EFO	Street Address	Zip Code	EFO	Street Address	Zip Code
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	Cookeville	1221 South Willow Ave.	38506
Jackson	1625 Hollywood Drive	38305-4316	Chattanooga	540 McCallie Avenue STE 550	37402-2013
Nashville	711 R S Gass Boulevard	37243	Knoxville	3711 Middlebrook Pike	37921
Columbia	1421 Hampshire Pike	38401	Johnson City	2305 Silverdale Road	37601



## OFFICIAL STATE USE ONLY

Received Date: <u>3/16/17</u>	Permit Number: <u>NR1703.052</u>	Reviewer: <u>LTY</u>	Field Office: <u>KEFO</u>
Fee amount paid: <u>0</u>	T & E Aquatic Flora and Fauna:	Impaired Receiving Stream:	Application Review:
Date:			<input type="checkbox"/> Deficient Date: _____
Check #:	Exceptional TN Water:		<input type="checkbox"/> Complete Date: _____

MAR 16 2017

**SHADY GLEN SUBDIVISION**  
**12616 S. Northshore Drive**  
**Knoxville, TN**

**Aquatic Resource Alteration Permit (ARAP)**

Submitted to

**Tennessee Department of Environment and Conservation**

Submitted for

**Shady Glen, LLC**  
Mr. Eric Moseley  
405 Montbrook Lane  
Knoxville, TN 37919

Date

March 15, 2017

FMA Project No. 330.007

Submitted By:



Section 6: Project Description

- 6.1 The owner of Shady Glen Subdivision at 12616 S. Northshore Drive is requesting coverage under the General ARAP for Sediment Removal and Stream Remediation. Construction activities will include removal of sediment that has discharged from the site, appropriate erosion and sediment control measures on-site, and the rehabilitation of the affected portions of Holder Branch. The stream banks, which consist of grass and brush, will be returned to their original conditions.
- 6.2 Reference Attachment 1 for USGS Quadrangle Map.
- 6.3 Reference Attachment 2 for photos of the project site.
- 6.4 The existing stream bed is approximately 10 feet wide where the proposed construction will take place. The average depth of flow in the stream is approximately 3-5 inches depending on the time of year and the recent rainfall history. The vegetation along the banks of the stream consists of grass, brush and light woods. The stream bed consists of natural earth.
- 6.5 As a result of the events noted in Section 7.1 and construction activities for the Shady Glen Subdivision, sediment has been discharged into Holder Branch. The intention of the proposed work is to remove the sediment and return the stream to the conditions described in Section 6.4.
- 6.6 Not Applicable.
- 6.7 Reference Attachment 3 for the Hydrological Determination Report.

Section 7: Project Rationale

- 7.1 The proposed activity within the limits of Holder Branch is necessary to remove the sediment in and around the creek located on the site and return it to its original state. The sediment washed into the area of the creek as a result of a major storm event that occurred on November 30, 2016. The precipitation for this rain event was between 5 and 7 inches. Subsequent rain events and continued construction activities have also hindered EPSC maintenance. This ARAP application for maintenance and remediation is intended to restore the stream to its original condition.

Section 8: Technical Information

- 8.1 See Attachment 4 for project details. Plans for the overall development, including EPSC plans, have been included in the ARAP submittal.

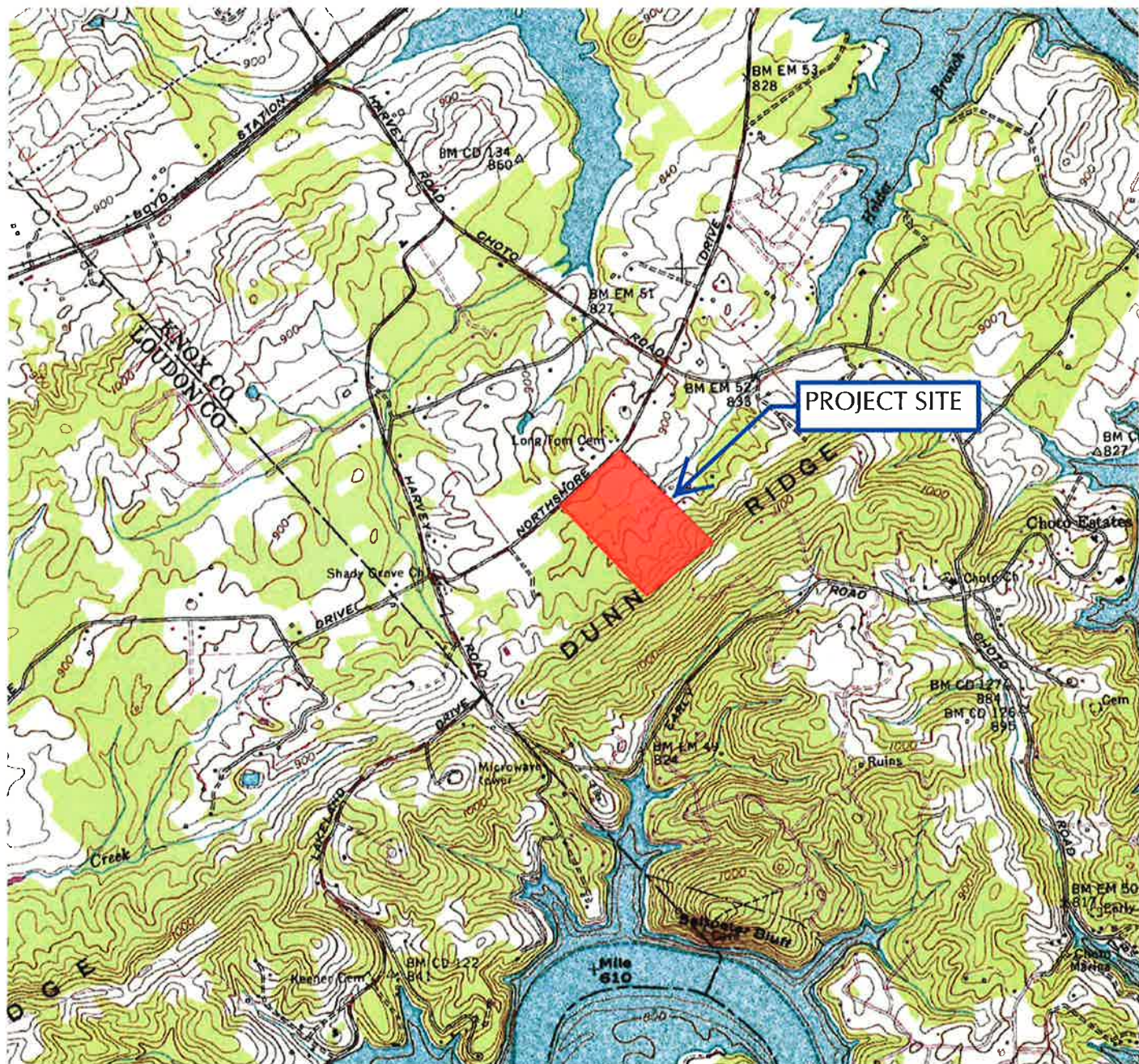
8.2 Sequence of events:

1. Contractor shall ensure that all on-site erosion and sediment control measures are installed and maintained per the TDEC Erosion Prevention & Sediment Control Handbook and the design plans.
2. Contractor shall install coffer dams upstream and downstream of the area impacted by sediment discharge.
3. Contractor shall install pump above upstream coffer dam to bypass clean water around the area impacted by sediment.
4. Contractor shall install pump between the two coffer dams to remove sediment-filled water from the stream. Contractor shall install pump discharge line with a filter bag to remove sediment before the water is discharged from the pump line.
5. Once water has been removed from impacted area, contractor shall apply temporary and permanent stream stabilization devices per TDEC specifications.
6. Monitor stabilization per TDEC time intervals and repair as needed until permanent stabilization is reached.
7. Removal of any temporary erosion control devices.

Contractor shall be responsible for selected construction method in accordance with TDEC specifications.

8.3 Erosion and sediment control devices shall be installed per the design plans and the TDEC Erosion & Sediment Control Handbook.





**Attachment 2: Project Photos**





Photo 1: Pre-Project Conditions  
Holder Branch, Upstream of Holder Lane culvert



Photo 2: Current Conditions  
Holder Branch, Upstream of Holder Lane culvert





**Photo 3: Pre-Project Conditions  
Holder Branch, Downstream of Holder Lane culvert**



**Photo 4: Current Conditions  
Holder Branch, Downstream of Holder Lane culvert**

**Attachment 3: Hydrological Determination Report**

**HYDROLOGIC DETERMINATION REPORT  
FOR  
12616 NORTHSORE DRIVE  
KNOXVILLE, TENNESSEE**

Prepared For:

S&E Properties  
405 Montbrook  
Knoxville, Tennessee 37919

Prepared by:



GEOServices, LLC  
2561 Willow Point Way  
Knoxville, Tennessee 37931

September 29, 2014



**HYDROLOGIC DETERMINATION REPORT  
FOR  
12616 NORTSHORE DRIVE  
KNOXVILLE, TENNESSEE**

Prepared For:

S&E Properties  
405 Montbrook  
Knoxville, Tennessee 37919

Prepared by:



GEOServices, LLC  
2561 Willow Point Way  
Knoxville, Tennessee 37931

September 29, 2014



September 29, 2014

S&E Properties  
405 Montbrook  
Knoxville, Tennessee 37919

Attention: Mr. Eric Moseley

Subject: **Hydrologic Determination**  
12616 Northshore Drive  
Knoxville, Tennessee  
GEOServices Project No. 24-14611

Dear Mr. Moseley:

GEOServices, LLC has completed a Hydrologic Determination for the drainage features located on the approximately 45 acre parcel at 12616 Northshore Drive in Knoxville, Tennessee. Please see our findings in the attached report.

GEOServices appreciates the opportunity to continue providing services to you and looks forward to working with you in the future. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,

**GEOServices, LLC**

Byron L. Barton, P.G.  
Environmental Department Manager

Benjamin D. Claxton, CPESC-IT, TN-QHP  
Senior Biologist

## **1.0 INTRODUCTION**

GEOServices, LLC (GEOServices) performed a hydrologic determination for the drainage features located on an approximately 45 acre parcel at 12616 Northshore Drive in Knoxville, Tennessee. **Figure 1**, the site location map shows the approximate site location on the Concord USGS quad. The site visit and hydrologic determination of the feature was conducted on September 22, 2014 by Benjamin Claxton of GEOServices. During this field review, information was gathered regarding the suspected drainage feature. The suspect drainage features were analyzed following the Tennessee Department of Environment and Conservation (TDEC) standard operating procedures for Hydrologic Determinations. Field data sheets completed during the course of the delineation are provided in **Appendix I**.

## **2.0 SITE DESCRIPTION**

**Figure 2** shows the site on an aerial image. The site is bordered to the north by Holder Lane then undeveloped land, to the south by residential area, to the east by undeveloped land, to the south by undeveloped land, and to the west by residential homes.

The site is located on the Concord, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle and has an approximate elevation range between approximately 925 and 1000 feet above mean sea level (**Figure 1**).

## **3.0 SITE INFORMATION**

Two drainage features were scored using the Tennessee Department of Environment and Conservation Hydrologic Determination Field Data form v1.4. A blue line was identified on the Concord, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle. The blue line was determined to be a wet weather conveyance until it reaches the property line at which it was scored a stream. A spring and another channel were observed near the northeast property line and it was scored as a stream.

## **4.0 ON-SITE FINDINGS**

The drainage features observed on site were scored using the Tennessee Department of

Environment and Conservation Hydrologic Determination Field Data form v1.4. The channels both scored as a wet weather conveyance.

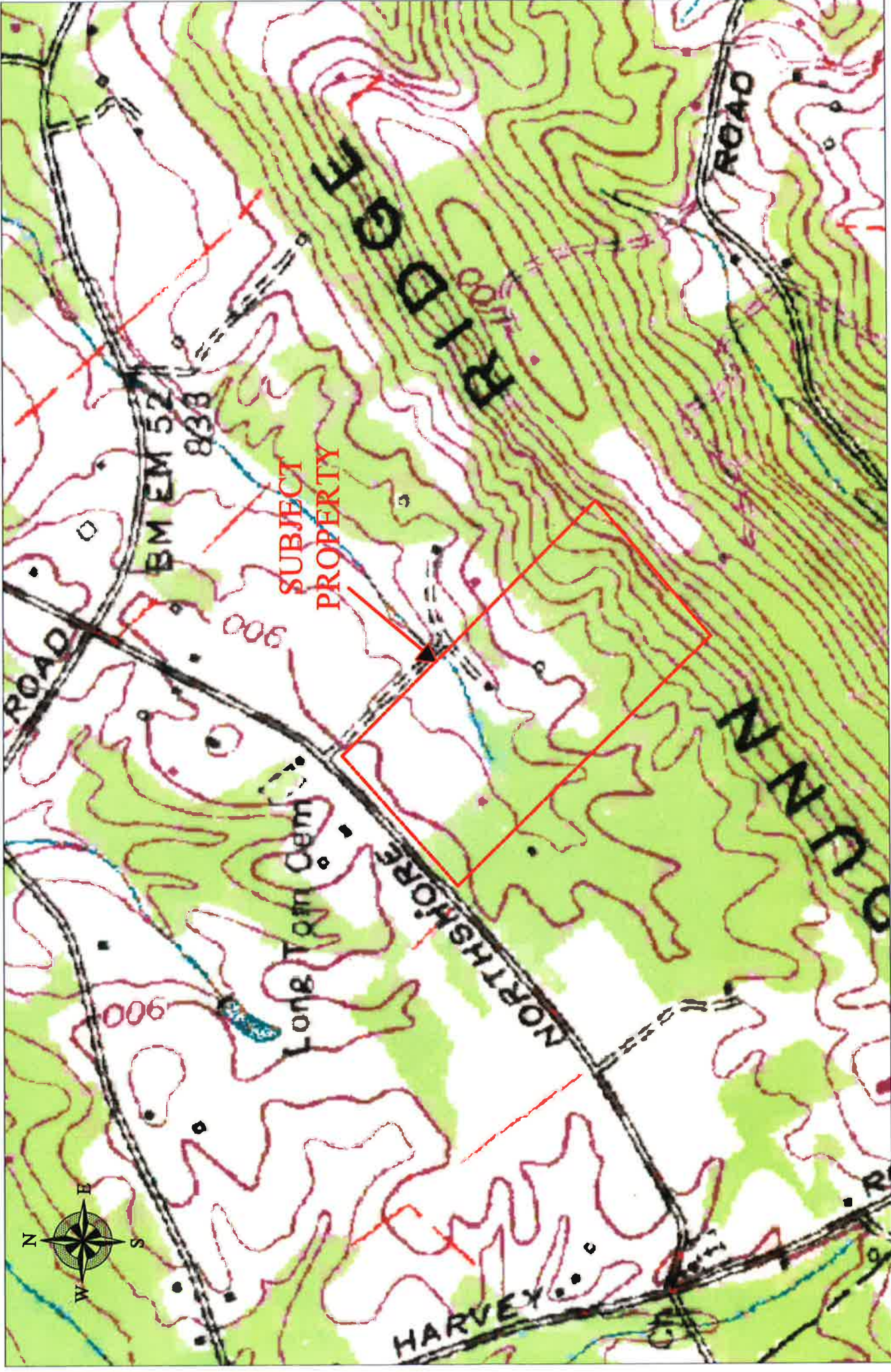
The first drainage feature contained none of the primary field indicators to be considered a wet weather conveyance or a stream so the secondary field indicator evaluation was performed. The first feature scored a 16.5 on the Hydrologic Determination Field Data Form, indicating it is a wet weather conveyance. A second data sheet was scored in the first drainage area at the property line where a pool of water was observed. A primary indicator, presence of fish, was noted at this location. The channel is a stream at this point. A second drainage feature and possible spring were observed to the east of the first channel. The second drainage feature contained none of the primary field indicators to be considered a wet weather conveyance or a stream so the secondary field indicator evaluation was performed. The second channel scored a 24.5 on the Hydrologic Determination Field Data Form, indicating it is a stream. See **Figure 2** for drainage feature locations.

More information regarding on-site findings of the drainage can be found in the field data forms included in **Appendix 1**.

Photographs taken during the investigation are included in **Appendix II**.



**Figure 1**  
**Location Map**



**Note:**

Site boundary and features shown are approximate only.  
Drawing composed from field notes and observations only.

SCALE:	NTS
CHECKED BY:	BDC
DRAWN BY:	CSG
DATE:	9-25-14

**GES**  
GEServices, LLC-Geotechnical and Materials Engineers  
2651 Willow Pond Way  
Knoxville, Tennessee 37911  
Phone: (603) 379-8242  
Fax: (603) 379-8252

SITE LOCATION MAP 12616 NORTHSHORE DRIVE STREAM DETERMINATION KNOXVILLE, TENNESSEE	JOB NO: 24-14611
---	------------------

**Figure 2**

**Site Plan**





Note:  
Site boundary and features shown are approximate only.  
Drawing composed from field notes and observations only.

Surface runoff direction.

SCALE:	NTS
CHECKED BY:	BDC
DRAWN BY:	CSG
DATE:	9-25-14

**GEO**

**GS**  
Services, LLC-Geotechnical and Materials Engineers

Phone: (615) 535-4242  
Fax: (615) 535-4251

2651 Willow Pond Way  
Knoxville, Tennessee 37931

SITE PLAN 12616 NORTSHORE DRIVE STREAM DETERMINATION KNOXVILLE, TENNESSEE	JOB NO: 24-14611
--	---------------------



**Appendix I**  
**Field Data Sheets**

Plot 1

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: <u>Knox</u>		Named Waterbody:		Date/Time: <u>9/22/14 - 940</u>	
Assessors/Affiliation: <u>B. Claxton</u>				Project ID :	
Site Name/Description: <u>12616 Northshore Dr</u>					
Site Location:					
USGS quad: <u>Concord</u>		HUC (12 digit):		Lat/Long: <u>35, 82359</u> <u>- 84, 17083</u>	
Previous Rainfall (7-days): <u>0.16"</u>					
Precipitation this Season vs. Normal :    very wet    wet <u>average</u> dry    drought    unknown					
Source of recent & seasonal precip data :					
Watershed Size :			Photos: <u>(Y)</u> or N (circle) Number :		
Soil Type(s) / Geology :					Source:
Surrounding Land Use :					
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :					
Severe		Moderate		<u>Slight</u> Absent	

## Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with $\geq 2$ month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i> )	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 16.5

Justification / Notes : Disch Discharge from large pond in neighborhood upstream appears to provide the only flow in channel

## Plot 1

**A. Geomorphology (Subtotal = 13)**

A. Geomorphology (Subtotal = 13)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank		0	1	2	3
2. Sinuous channel		0	1	2	3
3. In-channel structure: riffle-pool sequences		0	1	2	3
4. Sorting of soil textures or other substrate		0	1	2	3
5. Active/relic floodplain		0	1	2	3
6. Depositional bars or benches		0	1	2	3
7. Braided channel		0	<del>1</del>	2	3
8. Recent alluvial deposits		0	0.5	1	1.5
9. Natural levees		0	1	2	3
10. Headcuts		0	1	2	3
11. Grade controls		0	0.5	1	1.5
12. Natural valley or drainageway		0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0		Yes = 3	

**B. Hydrology** (Subtotal = 2 )

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel.	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	0.5	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

**C. Biology (Subtotal = 1.5)**

C. Biology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel <sup>1</sup>	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0.5	1	1.5
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	0	0.5	1	2

Focus is on the presence of upland plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 16.5

***Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points***

**Notes :**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be from a notebook or a standard sheet of stationery. There is no handwriting or other markings on the page.



Plot 2

# Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: <u>Knox</u>	Named Waterbody:	Date/Time: <u>9/22/14-1010</u>
Assessors/Affiliation: <u>B. Claxton</u>	Project ID:	
Site Name/Description: <u>12616 Northshire</u>		
Site Location:		
USGS quad: <u>Concord</u>	HUC (12 digit):	Lat/Long: <u>35, 82499</u> <u>- 84. 16801</u>
Previous Rainfall (7-days): <u>0.10"</u>		
Precipitation this Season vs. Normal:    very wet    wet <u>average</u> dry    drought    unknown		
Source of recent & seasonal precip data:		
Watershed Size:	Photos <u>Y</u> or N (circle) Number:	
Soil Type(s) / Geology:		Source:
Surrounding Land Use:		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes): <div style="display: flex; justify-content: space-around;"> <span>Severe</span> <span>Moderate</span> <span><u>Slight</u></span> <span>Absent</span> </div>		

## Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )		<u>Stream</u>
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed		Stream
9. Evidence watercourse has been used as a supply of drinking water		Stream

**NOTE :** If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

**Overall Hydrologic Determination =** Stream

**Secondary Indicator Score (if applicable) =** N/A

**Justification / Notes :** Sunfish observed in pool at culvert  
at property line.

## Plot 2

A. Geomorphology (Subtotal = )		Absent	Weak	Moderate	Strong
1. Continuous bed and bank		0	1	2	3
2. Sinuous channel		0	1	2	3
3. In-channel structure: riffle-pool sequences		0	1	2	3
4. Sorting of soil textures or other substrate		0	1	2	3
5. Active/relic floodplain		0	1	2	3
6. Depositional bars or benches		0	1	2	3
7. Braided channel		0	1	2	3
8. Recent alluvial deposits		0	0.5	1	1.5
9. Natural levees		0	1	2	3
10. Headcuts		0	1	2	3
11. Grade controls		0	0.5	1	1.5
12. Natural valley or drainageway		0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0		Yes = 3	

B. Hydrology (Subtotal = )	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel.	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = )	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0.5	1	1.5
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	0	0.5	1	2

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

***Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points***

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

# Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

Plot 3

County: <u>KNOX</u>	Named Waterbody:	Date/Time: <u>9/22/14-1030</u>
Assessors/Affiliation: <u>B. Claxton</u>	Project ID:	
Site Name/Description: <u>12616 Northshore DR</u>		
Site Location:		
USGS quad: <u>Concord</u>	HUC (12 digit):	Lat/Long: <u>35.82479</u> <u>-84.16811</u>
Previous Rainfall (7-days): <u>0.10"</u>		
Precipitation this Season vs. Normal:    very wet    wet <u>average</u> dry    drought    unknown		
Source of recent & seasonal precip data:		
Watershed Size:	Photos: <u>Y</u> or N (circle) Number:	
Soil Type(s) / Geology:		Source:
Surrounding Land Use: <u>PASTURE / WOODS / RESIDENTIAL</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes): <div style="display: flex; justify-content: space-around;"> <span>Severe</span> <span>Moderate</span> <span><u>Slight</u></span> <span>Absent</span> </div>		

## Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )	✓	Stream
7. Presence of naturally occurring ground water table connection	✓	Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

**NOTE:** If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

**Overall Hydrologic Determination =** Stream

**Secondary Indicator Score (if applicable) =** 24.5

**Justification / Notes:** Channel flowing out of what appears to be a spring.



Plot 3

A. Geomorphology (Subtotal = 13.5)				
	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6)		Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3	
15. Water in channel and >48 hours since sig. rain	0	1	2	3	
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	
17. Sediment on plants or on debris	0	0.5	1	1.5	
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	
19. Hydric soils in stream bed or sides of channel	No = 0	Yes = 1.5			

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel	3	(2)	1	0
21. Rooted plants in channel	3	2	(1)	0
22. Crayfish in stream (exclude in floodplain)	(0)	0.5	1	1.5
23. Bivalves/mussels	(0)	1	2	3
24. Amphibians	(0)	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	(0)	1	2	3
26. Filamentous algae; periphyton	0	(1)	2	3
27. Iron oxidizing bacteria/fungus	(0)	0.5	1	1.5
28. Wetland plants in channel	0	0.5	(1)	2

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

***Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points***

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be from a notebook or a standard sheet of stationery. There is no handwriting or other markings on the page.

## **Appendix II**

### **Photographs**



**Photograph 1:** Outflow pipe from large residential area pond.



**Photograph 2:** Photo of wwc looking down gradient.





**Photograph 3:** Photo of wwc, looking up gradient.



**Photograph 4:** Photo of stream at property line, looking down gradient.





**Photograph 5:** Photo of spring, looking up gradient.



**Photograph 6:** Photo of stream at below spring, looking up gradient.

**Attachment 4: Technical Information**



